Tetanus

CLINICAL CASE DEFINITION

Acute onset of hypertonia and/or painful muscular contractions (usually of the muscles in the jaw and neck) and generalized muscle spasms without other apparent medical cause.

CASE CLASSIFICATION

Confirmed: a clinically compatible case, as reported by a health-care professional.

TRANSMISSION

Tetanus is not directly transmitted from person-to-person. Infection occurs when tetanus spores are introduced into the body, usually through a puncture wound contaminated with soil, street dust, or animal or human feces; through lacerations, burns, and trivial or unnoticed wounds; or by injected contaminated street drugs.

INCUBATION PERIOD

Around 8 days, ranging from 3 to 21 days. SeeTetanus Timeline, below.

PERIOD OF COMMUNICABILITY

Not communicable from person to person

REPORTING/INVESTIGATION

Health care providers should immediately report cases/suspect cases of tetanus to local health department serving the residence of the case.

Local health department responsibilities:

- Contact case/guardian and health care provider.
- Determine if case meets clinical case definition.
- If definition met, or tetanus is otherwise suspected by a qualified health care provider, investigate using CDC surveillance worksheet and control guidelines below.
- Notify MDCH Immunization Division Vaccine-Preventable Disease (VPD) Surveillance Coordinator at 517-335-8159.
- Assist with coordination of specimen collection and coordination if public health lab resources (MDCH, CDC, etc) are used.
- Report/ensure reporting of case to the Michigan Disease Surveillance System (MDSS). CDC Tetanus Surveillance Worksheet may be helpful in field investigation to collect and capture data. Obtain immunization history information from provider record or MI Care Improvement Registry (MCIR - state immunization registry).
- Update the MDSS record in a timely manner with new or additional info as it becomes available. Finalize MDSS record when case investigation is complete.

- Follow-up with the case or provider 1 month after the onset of disease to determine clinical outcome/patient status (Recovered, Convalescing, or Died). Also collect any previously missing information for the Tetanus Surveillance Worksheet, with special attention to the following:
    - Number days hospitalized;
    - Number days in ICU;
    - Number days received mechanical ventilation;
    - Post-wound therapy (Tetanus toxoid and Tetanus Immune Globulin);
    - Age at onset;
    - Circumstances of any antecedent injury;
    - Tetanus toxoid vaccination history.

- In the event of death, obtain and send copies of hospital discharge summary, death certificate, and autopsy report to MDCH Immunization Division.

LABORATORY CONFIRMATION

There are no laboratory findings characteristic of tetanus. The diagnosis is entirely clinical and does not depend upon bacteriologic confirmation. *Clostridium tetani* is recovered from the wound in only 30% of cases, and not infrequently, it is isolated from patients who do not have tetanus. Sera collected before TIG is administered can demonstrate susceptibility of a patient to the disease.

IMMUNITY/SUSCEPTIBILITY

- Susceptibility to tetanus is general. Immunity is conferred by active immunization with tetanus toxoid and persists for 10 years after full immunization. Booster doses of tetanus toxoid (given combined with diphtheria toxoid in the form of Td) are indicated every 10 years.

- Because of waning antitoxin titers, most individuals have antitoxin levels below optimal levels 10 years after the last dose of tetanus antitoxin.

- Serologic studies of the U.S. population demonstrate an excellent correlation between vaccination coverage and immunity to tetanus among children. However, antibody levels decline over time, and one-fifth of older children (10–16 years of age) do not have protective antibody levels. Immunity levels are lowest among the elderly. A national population-based seroprevalence survey found that 72% of adults > 70 years of age lacked protective levels of tetanus antibodies (>0.15 IV/ml) [Gergen PJ, et al. A population-based serologic survey of immunity to tetanus in the United States. N Engl J Med 1995;332:761-6.]

CONTROL MEASURES

Prompt recognition of tetanus is important because hospitalization may be required. Prompt administration of tetanus toxoid and TIG may decrease the severity of the disease. Because tetanus is a rare disease, public health authorities may be consulted on clinical management issues.

- Investigate reports of possible tetanus as soon as possible.

- If clinical case definition is met (clinically compatible, reported by a health care professional), regard as true tetanus case.

- Provide case treatment information if needed to care provider:

    - Tetanus Immune Globulin (TIG) given intra-muscular in doses of 3,000 - 6,000 IU.
    - Wound should be debrided widely and excised if possible.

- Maintain an adequate airway and employ sedation as indicated.
- Muscle relaxant drugs together with tracheostomy or nasotracheal intubation and mechanically-assisted respiration may be lifesaving.
- Active immunization should be initiated concurrently with therapy.
- See Table 1 (below) for routine wound management guidelines.

Table 1. Guide to Tetanus Prophylaxis in Routine Wound Management[20]

History of adsorbed tetanus toxoid (doses)	Clean minor wounds		All other wounds[a]	
	dT[b]	TIG[c]	dT[b]	TIG[c]
Unknown or < 3	Yes	No	Yes	Yes
> 3 doses[d]	No[e]	No	No[f]	No

[a] Such as, but not limited to, wounds contaminated with dirt, feces, soil, and saliva; puncture wounds; avulsions; and wounds resulting from missiles, crushing, burns, and frostbite.

[b] For children younger than 7 years of age, diphtheria and tetanus toxoids and acellular pertussis vaccine (DTaP) is recommended; if pertussis vaccine is contraindicated, DT is given. For persons 7 years of age or older, dT is recommended. dT indicates adult-type diphtheria and tetanus toxoids; TIG, tetanus immune globulin (human).

[c] Equine tetanus antitoxin should be used when TIG is not available.

[d] If only three doses of fluid toxoid have been received, a fourth dose of toxoid, preferably an adsorbed toxoid, should be given. Although licensed, fluid tetanus toxoid is rarely used.

[e] Yes, if more than 10 years since the last dose.

[f] Yes, if more than 5 years since the last dose. More frequent boosters are not needed and can accentuate side effects.

- If needed, consultation assistance is available through the following:
  Contact information:
  MDCH VPD Surveillance Coordinator: 517-335-8159
  MDCH Communicable Disease Epidemiology Office: 517-335-8165
  CDC consultation (National Center for Immunization and Respiratory Diseases): 404-639-8257
  CDC after-hours: 770-488-7100 or 404-639-2888 or 404-639-2889.
  MDCH Laboratory: 517-335-8067

- Provide information about tetanus to persons at risk and/or the general public. An excellent Question-&-Answer tetanus information sheet in **.PDF** format is available from the Immunization Action Coalition.

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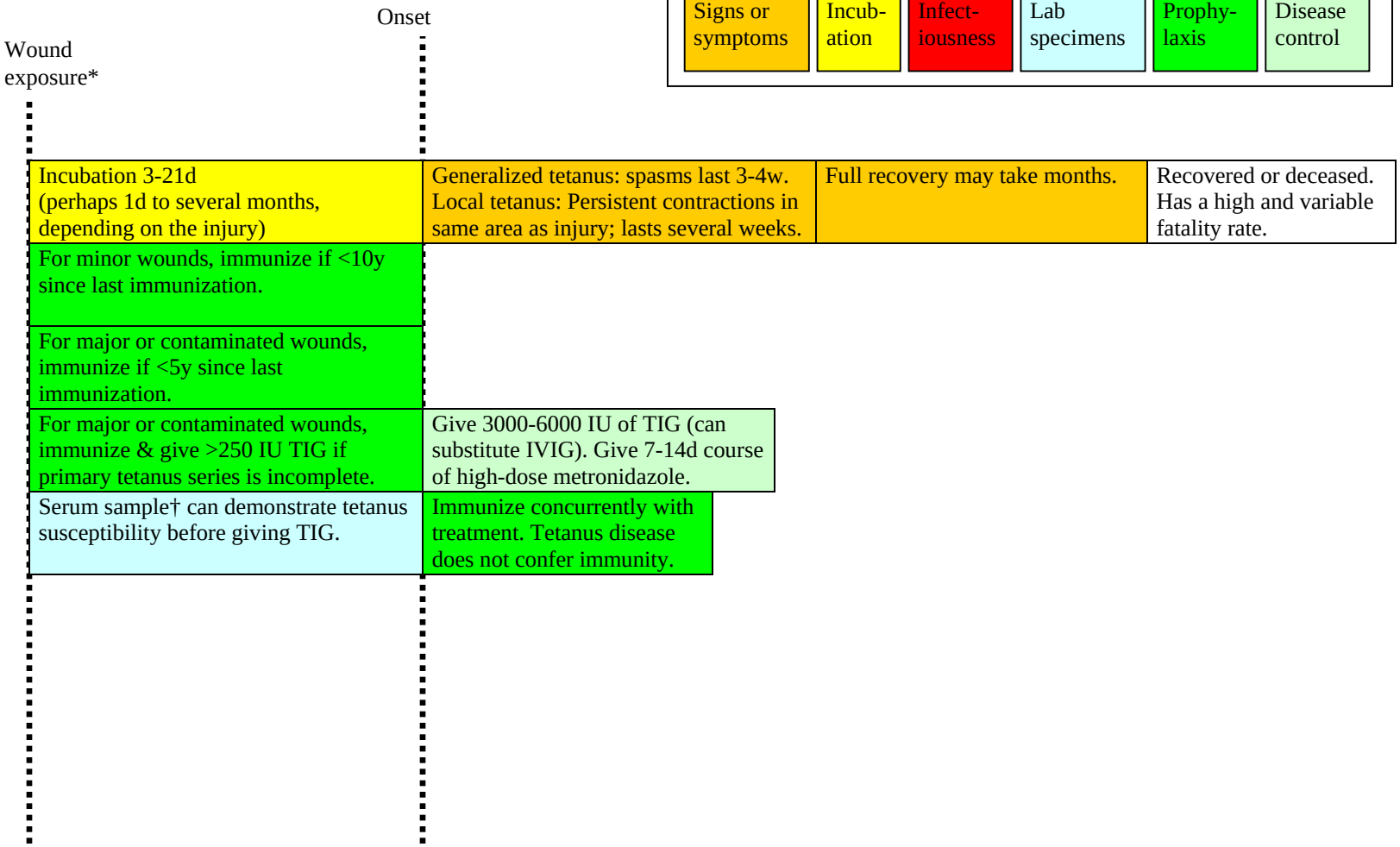
Tetanus timeline diagram

Key: Numbers in parentheses, e.g., "(12-25d)", are outer ranges.

Signs or symptoms	Incub-ation	Infect-iousness	Lab specimens	Prophy-laxis	Disease control



* Tetanus is not communicable between people (though outbreaks have occurred from contaminated drug injection apparatus). It is caused by contaminated material (particularly feces) entering a wound. Tetanus can result from apparently minor wounds. Neonatal tetanus can result from infection at the umbilical stump if the mother is not immune.

† No other laboratory work is needed. Tetanus diagnosis is purely clinical.

Sources: Control of Communicable Diseases Manual, Red Book, Pink Book, CDC VPD surveillance manual